

WE CLAIM:

1. A method for vapor-depositing a layer of a needle-shaped x-ray luminophore with at least one alkali metal on a carrier, said method comprising providing a carrier, simultaneously vaporizing a mixture of at least one europium(III) oxyhalogenide with at least one alkali halogenide and vapor-depositing the vapor on the carrier.

2. A method according to claim 1, wherein the step of simultaneously vaporizing utilizes a molybdenum vaporizer.

3. A method according to claim 1, wherein the simultaneously co-vaporization of the alkali halogenide with the europium(III) oxyhalogenide, the ratio of the Eu concentration of the alkali halogenide layer in the proximity of the substrate to the Eu concentration of the alkali halogenide layer in the proximity of the surface can be reproduced between a factor of 0.4 and 1.2.

4. A method according to claim 3, wherein the concentration is reproduced between a factor of 0.6 and 0.8.

5. A method according to claim 1, wherein the at least one europium(III) oxyhalogenide has a formula of $\text{Eu}_3\text{O}_4\text{Hal}$, wherein Hal is at least one halogenide from a group consisting of F, Cl, Br and I.

6. A method according to claim 5, wherein the alkali halogenide comprises at least one metal selected from a group consisting of Na, K, Rb and Cs and at least one halogenide from the group F, Cl, Br and I.

7. A method according to claim 1, wherein the x-ray luminophore occurs according to the following formula:



wherein A is an alkali metal from a group consisting of Na, K, Rb and Cs; B and C are at least one halogenide from a group consisting of F, Cl, Br and I; wherein C can equal 0 and D

and E are at least one halogenide from a group consisting of F, Cl, Br and I, wherein A, D and/or E can be equal.

8. A method according to claim 7, wherein the depositing of the layer on the carrier forms a storage luminophore plate.